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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,831	02/18/2005	Junichi Seki	03500.017684	1076

5514 7590 01/30/2006

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EXAMINER

KANG, JULIANA K

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 01/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary**Application No.**

10/524,831

Applicant(s)

SEKI ET AL.

Examiner

Juliana K. Kang

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/18/05, 6/3/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-5, 7 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsuura et al (U.S. Patent 6,961,501 B2).

Regarding claims 1 and 5 Matsuura et al discloses an optical device comprising: an optical element formed by using a plurality of pillar-shaped members (31) arranged periodically and a pair of support members (33 [piezoelectric element] and metal-coated membrane [see column 7 line 65 to column 8 line 6]) arranged perpendicularly relative to the direction of arrangement of the pillar-shaped members (Fig. 6) so as to sandwich the pillar shaped members, said optical element showing a periodic structure of periodic distribution of refractive index; and means for applying force (see column 6 lines 65-67)

to the pillar-shaped members by way of the support members in a direction perpendicular to the direction of arrangement of the pillar-shaped members.

Regarding claims 2 and 8, Matsuura et al discloses that the force applied to the pillar-shaped members changes the height and the diameter of the pillar-shaped members (see column 4 lines 9-10, column 7 lines 13-21, and also see Figs. 14 and 15). Please note, the method claim 8 parallels articles claims 1 and 2 without the introduction of any particular manufacturing methods, so that it is proper to examiner the article and method claims together.

Regarding claim 3, Matsuura et al's support members has to be made of a material having a rigidity greater than the pillar-shaped members for the force upon the pillars to make the pillars to compress.

Regarding claim 4, Matsuura et al discloses pillar-shaped members that are deformed without changing the period of the pillars (see Fig. 10).

Regarding claim 7, Matsuura et al discloses the support member (33, 34) fixed to a piezoelectric element and electrodes arranged on the piezoelectric element and a circuit for applying a voltage to the electrodes (see column 4 lines 1-11, column 7 lines 31-54 and see Fig. 3 and 4).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura et al.

As described above Matsuura et al disclose the claimed invention and further teaches confining the signals within the photonic device (see column 5 lines 14-31). Thus, using reflectors on both ends of the pillar shaped members would have been obvious to one with ordinary skill in the art to further improve the confinement of the light within the photonic device of Matsuura et al.

6. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi et al (EP 1 329 758 A1, submitted by applicant) and further in view of Fukushima et al (US 2002/0135863 A1).

Takiguchi discloses all the claimed limitations except pillar-shaped members. Takiguchi teaches using a plurality of microspheres (optical microcrystals). Fukushima et al teaches microspheres and pillar-shaped photonic crystals are interchangeable (see [0040-0043]). Therefore, because the microspheres and pillar-shaped photonic crystals were art recognized equivalents at the time the invention was made one of ordinary skill in the art would have found it obvious to substitute pillar-shaped photonic crystal for spherically shaped photonic crystal. Since Takiguchi teaches applying force in the direction perpendicular to the surface of base (see [0036]) to deform the photonic crystals, it inherently teaches deforming the height and diameter of the photonic crystal. Takiguchi further teaches that the support member is a piezoelectric element (see [0035]). Takiguchi also teaches using a dichroic mirror (reflection layer) (see [0033]). Takiguchi teaches the piezoelectric element is deformed by an electrical input, thus it has to comprise electrodes and circuit for applying a voltage.

Conclusion

7. The prior art documents submitted by applicant have been considered and made of record (note the attached copy of form PTO-1449).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (571) 272-2348. The examiner can normally be reached on Mon. and Thur. 8:00-2:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JULIANA KANG
PRIMARY EXAMINER

Juliana Kang
1/24/06